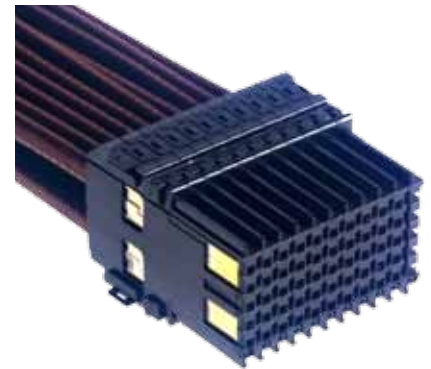# 3M™ Ultra Hard Metric (UHM) Cable Assemblies

Fully-Shielded Ultra High Performance Low Crosstalk 2 mm Cable Assemblies

The 3M Ultra Hard Metric (UHM) Cable Assembly is the industry's first known fully-shielded 2 mm hard metric (HM) cable assembly designed for up to 12 Gbps performance when used with industry standard 2 mm HM (IEC 61076-4-101) or 3M™ High Speed Hard Metric (HSHM) Backplane Headers.

The UHM Cable Assembly's modular "snap together" wafer design enables cable assembly designs that can be customized to the specific needs of the application with up to 50 high speed differential or coaxial channels per mating connector. Standard 2 mm HM connector based systems can use the UHM Cable Assemblies to support IO speeds of up to 12 Gbps. Examples of backplane designs using 2 mm HM connectors are PICMG CompactPCI® 3U and 6U and VITA VME 64x. Using the UHM Cable Assemblies, standard CompactPCI and VME 64x systems can support cable-to-board rear IO using multi-gigabit high speed serial IO protocols such as SAS, SATA, Rapid IO, PCI Express and Gigabit Ethernet.

The UHM Cable Assembly uses a unique "shielded controlled impedance" (SCI) technology to provide a tightly controlled impedance fully-shielded differential pair (100 ohm or 85 ohm) or single-ended (50 ohm or 75 ohm), low crosstalk transmission path through the cable-to-board transition. Full shielding dramatically reduces crosstalk and tight impedance control improves insertion loss as compared to a legacy unshielded or strip line shielded 2 mm HM cable assemblies.
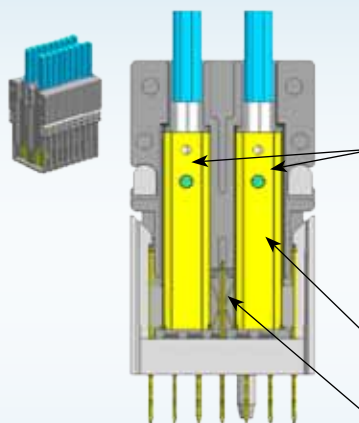

3M™ Ultra Hard Metric (UHM) Cable Assembly

Signal Integrity Performance
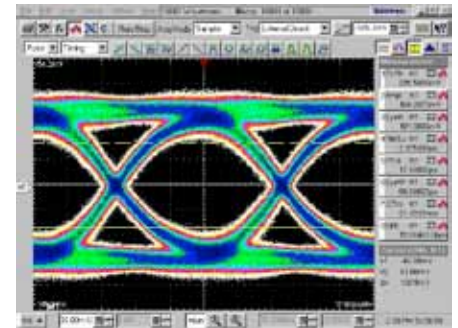
Eye Opening @ 12 Gbps
0.5 m double-ended 3M™ Ultra Hard Metric (UHM) Cable Assembly mated to two 2 mm 3M™ Hard Metric (HM) Headers (after eliminating PCB and via effects)

3M™ Ultra Hard Metric (UHM) Cable Assembly Wafer Cross Section

NEW! Modular 2 mm 3M™ Shielded Controlled Impedance (SCI) 5x1 Wafer

- Two differential or single ended channels per wafer
- Mates to 2 mm HM/cPCI headers or 3M™ High Speed Hard Metric (HSHM) Backplane Headers
- "Snap together" modular design up to 25 wafers – 50 differential or coaxial channels
- Full 360° shielding box for each channel to minimize crosstalk
- 1 common ground per wafer in row "C"

The 3M™ Ultra Hard Metric (UHM) Cable Assembly is available in configurations that can mate to standard 5-row 2 mm HM or 3M™ High Speed Hard Metric (HSHM) Connectors - A, B, CL, CR style form factors allowing for very high signal density.

3M

<table>
<tr><td colspan="2">**3M™ Ultra Hard Metric (UHM) Cable Assemblies Features and Benefits**</td></tr>
</table>

High-speed cable assembly – up to 12 Gbps for high performance cable to board applications

Full shielding of signals or signal pairs minimizes crosstalk and insertion loss

Mates to standard 2 mm HM 5-row headers and 3M HSHM Headers

Flexible snap on stacking wafer design allows for design flexibility

Target Markets and Applications

Embedded Systems – CompactPCI® 3U and 6U computing systems, VME systems

Military/Aerospace – embedded computing and control systems

Communications - Access equipment, e.g. channel banks, wireless

Medical – Ultrasound systems

Test and Measurement – e.g. PXI systems

Product Specifications

Specifications	Product	Available upon request
	Signal Integrity data	Available upon request
Materials	Contacts	Copper alloy
	Platings	Nickel 100 µ" (2.54 µm) Avg/30µ" (0.76 µm) avg. gold
	Housings	Thermoplastic; UL 94-V0
Mechanical	Mating Force	0.32N nominal per signal contact
	Unmating Force	180 gms typical per signal contact
	Normal Force	115 gms typical per signal contact
Environmental	Temperature Rating	-40°C to 105°C
Electrical	Current Rating	1 A at 70°C Signal
	Insulation Resistance	5 Giga Ohm
	Withstanding Voltage	500 V dc for 1 minute

Mating Connector	UHM Cable Assembly Part Number	Tech Sheet
2 mm, A Type: 110 Signal Contacts, 5 Rows, HM or HSHM header	981717-058-XXX.X-C-1-11-1	TS2364
(Need 2 assemblies per A style header)		TS2364
2 mm, B Type: 95 Signal Contacts, 5 Rows, HM or HSHM header	981717-058-XXX.X-C-1-19-1	TS2364
2 mm, B Type: 110 Signal Contacts, 5 Rows, HM or HSHM header	981717-058-XXX.X-C-1-22-1	TS2364
2 mm, B Type: 125 Signal Contacts, 5 Rows, HM or HSHM header	981717-058-XXX.X-C-1-25-1	TS2364
2 mm, C Type: 55 Signal Contacts, 5 Rows, HM or HSHM header	981717-058-XXX.X-C-1-11-1	TS2364

XXX.X = Length of Assembly from tip to tip in inches
Additional configurations available – see TS2364 for details

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Electronic Solutions Division
Interconnect Products
6801 River Place Blvd.
Austin, TX 78726-9000
1-800-225-5373
www.3Mconnectors.com

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